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Remarks

Reconsideration of this application is requested. Claims 1, 2, 5, 9, 10, 12-16 and 18-24 have been amended per this response to the Office Action and claims 6-8, 11 and 17 have been cancelled. Claims 1-5, 9-10, 12-16 and 18-25 remain in the application and new claims 26-28 have been added.

Objection to the Specification

The Office Action states that the disclosure is objected to for several informalities. Please amend the specification as shown below.

Page 6, line 29

Please replace the paragraph on page 6, starting at line 28, with the following:

Fig. 4 illustrates a 16-state convolution encoder state transition graph for a rate one-half convolution code. Fig. 5 illustrates an example of a transition calculation for one embodiment of the present invention. Note that the new state S_0 may have a previous state, being either S_0 or S_8. In the Viterbi algorithm of the present invention, a branch metric is calculated for each transition between the states. The branch metric is calculated for each of the possible transitions between states in the trellis. In this example, the branch between the old state S_0 and the new state S_0 has a branch metric of 1. The branch between the old state S_8 and the new state S_0 has a branch metric of 3. After the calculation of the branch metric, the branch metric is added to the prior path metric of the old state to produce two candidate path metrics. One of the candidate path metrics corresponds to the transition between the old state S_0 and the new state S_0 and has a path metric of 6; the other candidate path metric corresponds to the transition between the old state S_8 and the new state S_0 and has a candidate path metric of 16. Since the path metric of 6 is less than candidate path metric 16, the new path metric is

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selected as 6, and the selected transition is between the old state S_0 and the new state S_0.

Page 7, line 18

Please replace the paragraph on page 7, starting at line 15, with the following:

Looking again at Fig. 5, the old state S_0 has a prior optimal path of "...1011," whereas the old state S_8 has a prior optimal path of "...1100." The optimal path associated with the old state is shifted one bit to allow the new data "0", indicative of the transition between the old state S_0 and the new state S_0 to be added to produce a new optimal path "...10110."

Page 11, lines 4 and 5

Please replace the paragraph on page 10, starting at line 20, with the following:

The optimal path calculation 114 preferably operates in parallel with the calculation of the new path metric. In step 116, the construction of the path metric produces an indication of the traceback pointer. This traceback pointer allows for the determination of the new data in step 116, and the updating of the optimal path in step 118. The steps 120 effectively duplicate the steps 105. For this reason, indications from the calculation of the new path metrics may be used to update the next state and the next symbol. In one embodiment, in order to speed up the operation of the steps 116 and 118, the previous optimal paths are preloaded in a step 122. The previous optimal path values may be updated in the updating step 118. Note that the calculation of the optimal path can be computationally intense, requiring calculations for every trellis state in each symbol period. Thus, if there are 256 trellis states and 192 symbols in the block, the number of updates of the optimal path in the calculation steps 114 is 256 x 192. Due to the parallelism, calculation steps 114 are done at the same time as new path metric block calculation steps 98. Thus, the readout of the

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optimal path in step 124 may be made much quicker than the traceback technique done in the prior art, reducing the total calculation time.

Page 13, lines 7-11

Please remove the paragraphs on page 13, starting with line 7 and continuing through line 11 that reference Figs. 13-16. Further, please remove the reference, under BRIED DESCRIPTION OF THE DRAWINGS, to Figs. 13-16 found on page 5, starting with line 1 and continuing to line 8. Along with removing the reference to Figs. 13-16 from the specification, also see the attached marking of these figures as cancelled and labeled as 'Annotated Sheet' per 37 CFR 1.121(d)(1).

Page 14, line 1

On page 14, line 1, please replace "Claims:" with "The Invention Claimed Is".

Response to the 35 U.S.C. §112 Rejection

The Office Action rejects claims 1-25 under 35 U.S.C. §112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 1, 2, 5, 9, 10, 12-16 and 18-24 have been amended per this response to the Office Action and claims 6-8, 11 and 17 have been cancelled. By this amendment it is believed that that antecedent basis for all claims have been corrected and the rejection under 35 U.S.C. §112, second paragraph, has been overcome.

Allowance of claims

Applicant would like to gratefully acknowledge the Examiner's allowance of claims 1-25 if rewritten or amended to overcome the rejection under 35 U.S.C. §112, second paragraph, set forth in the Office Action. It is believed that

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claims 1, 2, 5, 9, 10, 12-16 and 18-24 have been amended and are now allowable.

Conclusion

The foregoing is submitted as a full and complete response to the Office Action mailed March 1, 2004, and it is submitted that claims 1, 2, 5, 9, 10, 12-16 and 18-24 are now in condition for allowance. Reconsideration of the rejection and objection is requested. Allowance of these claims is earnestly solicited.

Applicant herewith petitions the Director of the United States Patent and Trademark Office to extend the time for response to the Office Action dated March 1, 2004, for 3 months. Please charge Deposit Account #50-0221 in the amount of $950.00 for a three month extension. Should it be determined that an additional fee is due under 37 CFR §1.16 or 1.17, or any excess fee has been received, please charge that fee or credit the amount of overcharge to deposit account #50-0221.

If the Examiner believes that there are any informalities that can be corrected by an Examiner's amendment, a telephone call to the undersigned at (480) 715-5388 is respectfully solicited.

Respectfully submitted,
Daniel J. Pugh

Lanny L. Parker
Patent Agent
Reg. No. 44,281

c/o Blakely, Sokoloff, Taylor & Zafman, LLP
12400 Wilshire Blvd., Seventh Floor
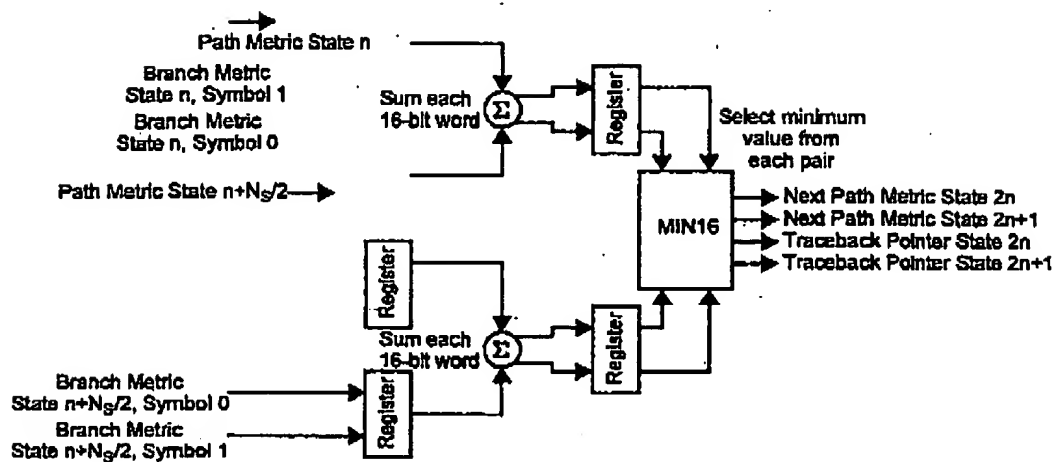Los Angeles, CA 90025-1026
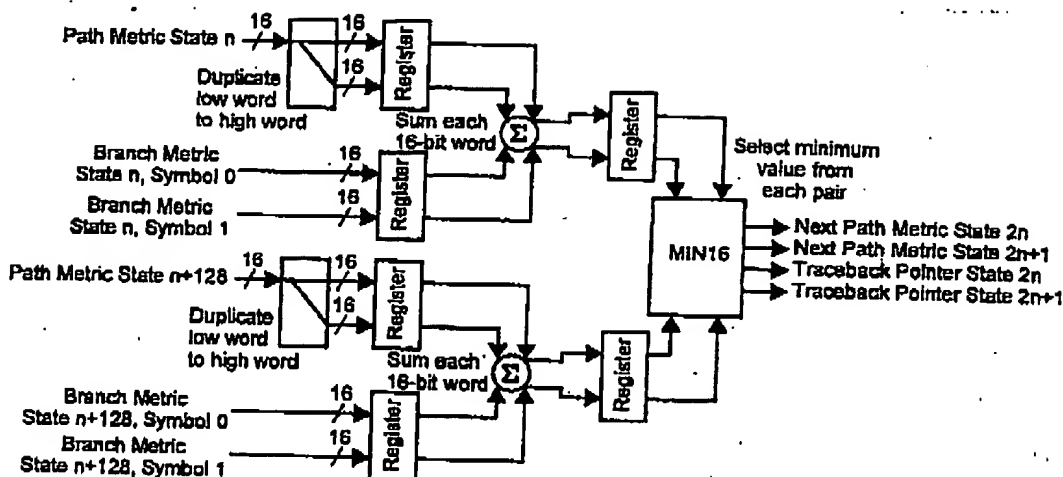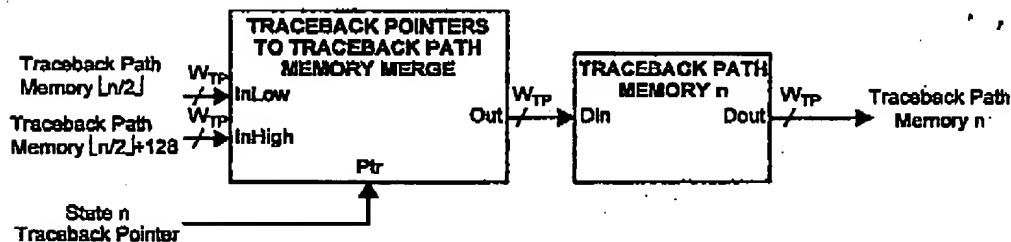(503) 264-0967

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FIGURE 13

'Annotated Sheet'

FIGURE 14

TRACEBACK PATH MEMORY SELECT TRUTH TABLE	
Sel	Out
0	Ptr:(TP Mem $\lfloor n/2 \rfloor$)[14:0]
1	Ptr:(TP Mem $\lfloor n/2 \rfloor$+128)[14:0]

FIGURE 15

'Annotated Sheet'

140

CURRENT
(SYMBOL BLOCK)
B
OPTIMAL
PATH
MEMORY
UNIT(S)

OPTIMAL
PATH
UPDATE →

OPTIMAL
PATH
READ →

142

PREVIOUS
(SYMBOL BLOCK)
A
OPTIMAL
PATH
MEMORY
UNIT(S)

READOUT
OPERATION →

FIGURE 16A

140'

PREVIOUS
(SYMBOL BLOCK)
B
OPTIMAL
PATH
MEMORY
UNIT(S)

← Readout
operation →

142'

CURRENT
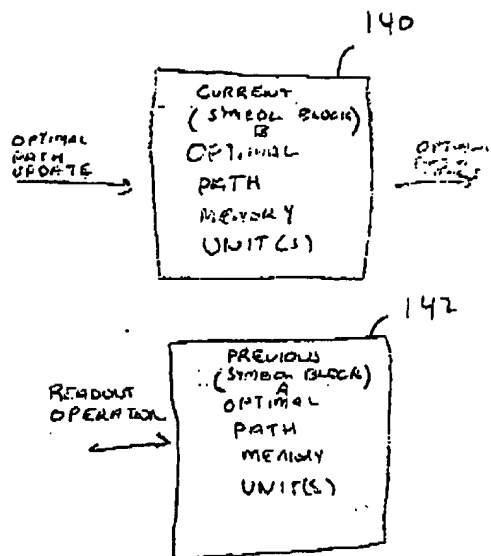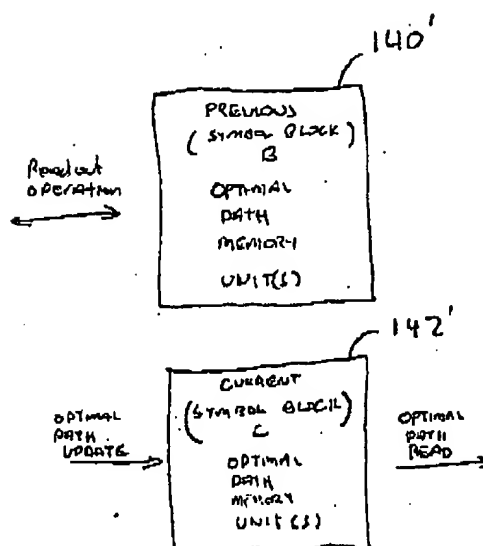(SYMBOL BLOCK)
C
OPTIMAL
PATH
MEMORY
UNIT(S)

OPTIMAL
PATH
UPDATE →

OPTIMAL
PATH
READ →

FIGURE 16B

'Annotated Sheet'